AMENDMENTS TO THE CLAIMS

1. (Currently Amended) Method for compensating thermal optical effects in the beam path of an arrangement containing optical components, wherein in the beam path for a purpose of optical compensation

being situated at least three optical transparent elements having an intimate contact being used in cooperation,

adjacent elements of said at least three elements having ~~at least two~~ different material properties,

of ~~are used in cooperation in the beam path for the purpose of optical compensation, and heating by means of~~ radiation absorption for heating,

of radial thermal conducting for creating a distribution of~~, thermal conduction in order to generate a power-dependent~~ temperature distribution, and

of thermal dispersion in order to generate a thermal lens,

therefore, for compensating said thermal optical effects, said functions of absorption, radial thermal conductivity and thermal

dispersion are distributable to said three elements where there is no need for one and the same element to fulfill said functions ~~are distributed for the purpose of compensation over the different elements~~.

2. (Currently Amended) Method according to Claim 1, wherein ~~one of the~~ two not adjacent elements of said at least three optical elements ~~is brought as~~ are ~~optically~~ transparent optical solid bodies

and at least one of said at least three elements between said optical solid bodies being a compensating ~~compensation~~ medium;

~~in the beam path on both sides into mechanical contact with a likewise optically transparent solid body as a further element, and the further element has~~ said optical solid bodies having a prescribed radiation absorption,

by said prescribed radiation absorption a radial heating pattern is created by an incident radiation,

said ~~the~~ radial heating pattern being imprinted by ~~the mechanical~~ said intimate contact ~~with~~ to the ~~compensation~~ compensating medium for compensating thermal optical effects in ~~the other~~ said optical components ~~and/or the~~ and said adjacent ~~solid bodies~~ elements, respectively.

3. (Currently Amended) Method according to Claim 2, wherein said solid bodies have ~~in particular for compensating thermal optical effects in a laser resonator, wherein the further element has~~ a prescribed absorption ~~for~~ of a ~~the~~ laser radiation in the beam path~~, preferably for the pumping optical radiation, and in a preferred way the~~ and said compensation medium and ~~the~~ said adjacent solid bodies are cooled to the same temperature at their periphery~~, preferably in an encompassing fashion, in particular at the same radial distance from the axis of the beam path~~.

4. (Currently Amended) Optical unit which can be brought into ~~the~~ a beam path of an optical arrangement for compensating thermal optical effects of optical components present in the beam path of the optical arrangement ~~for carrying out the method according to Claim 1~~, comprising:

at least three optical transparent elements in said beam path for compensating

said at least three optical elements having an intimate contact,

adjacent elements of said at least three elements having ~~which have at least two~~ different material properties and cooperate effectively for ~~the compensation~~ said compensating,

onto said at least three optical elements ~~in the beam path, and over which elements there can be distributed, preferably with a different effect~~ for the purpose of compensation following material properties are distributable,

heating by means of radiation absorption,

radial thermal conduction for generating a power-dependent temperature distribution, and

thermal dispersion for generating a thermal lens,

therefore, for compensating said thermal optical effects said functions of absorption, radial thermal conductivity and thermal dispersion are distributable to said three elements where there is no need for one and the same element to fulfill all said functions.

5. (Currently Amended) Optical unit according to Claim 4, wherein

two not adjacent elements of said at least three optical elements are transparent optical solid bodies having a radiation absorption, and

at least one of said at least three elements between said optical solid bodies being a compensating element,

said compensation element having ~~one of the elements has~~ an optical compensating ~~compensation~~ space ~~which is~~ being filled~~, in particular completely filled,~~ with an optically transparent compensating ~~compensation~~ medium,

~~and optically transparent solid bodies, arranged on both sides of the compensation space as further element with radiation absorption, with which solid bodies~~

~~the compensation~~ said compensating medium ~~has such a~~ having an intimate close thermal contact in that manner to said adjacent optical solid bodies that good heat transfer from the solid bodies to the compensation medium is ensured.

6. (Currently Amended) Optical unit according to Claim 5, wherein ~~the~~ said compensation space extends perpendicular to the optical axis of the beam path~~, in particular in a formation which is radially symmetric relative to the axis of the beam path~~.

7. (Currently Amended) Optical unit according to Claim 5, wherein ~~the~~ a radial extent of ~~the~~ said compensation space relative to the optical ~~axis of the~~ beam path is adapted to~~, preferably~~ being selected to be identical to~~,~~ that of the ~~neighboring~~ adjacent solid bodies.

8. (Currently Amended) Optical unit according to Claim 5, wherein the solid bodies ~~immediately neighboring the~~ adjacent to said compensation medium are held with the aid of a cooling holder ~~which preferably completely encompasses the entire envelope of the solid body in intimate thermal contact~~.

9. (Currently Amended) Optical unit according to Claim 5, wherein

said compensation medium being a material, which transmits no mechanical shear forces, ~~as compensation medium~~ and

an expansion space ~~which~~ is connected to ~~the~~ said compensation space into which ~~the~~ said compensation medium can undertake volumetric equalization in the event of thermal loading.

10. (Currently Amended) Optical arrangement with an optical unit ~~according to Claim 3~~ for generating or amplifying radiation, having

at least one optically active medium being part of said unit,

wherein ~~the~~ said active medium ~~is~~ being subdivided into several partial optical solid media,

at least one ~~a~~ compensation space filled with an optical transparent ~~a~~ compensation medium ~~is~~ being arranged as an optical element between ~~the~~ two of said partial optical solid media,

said compensation medium having an intimate contact to each of said adjacent partial optical solid media and being used in cooperation with said partial optical media,

said partial optical solid media and said compensation medium having different material properties

of radiation absorption for heating,

of radial thermal conducting for creating a distribution of temperature, and

of thermal dispersion in order to generate a thermal lens,

said partial optical solid media having a prescribed radiation absorption,

by said prescribed radiation absorption a radial heating pattern is created by an incident radiation,

said radial heating pattern being imprinted by said intimate contact to said compensating medium for compensating thermal optical effects in said partial media ~~and as a further optical element of the optical unit, and each partial medium acts as an optically transparent solid body of the unit~~.

11. (New) Method according to claim 3, wherein said compensation medium and said adjacent solid bodies are cooled to the same temperature at their periphery in an encompassing fashion at the same radial distance from the axis of the beam path.

12. (New) Method according to claim 2 for compensating thermal optical resonator,

said laser resonator having a pumping optical radiation,

wherein said optical solid bodies having a prescribed absorption of said pumping optical radiation.

13. (New) Optical unit according to claim 5, wherein said optical compensation space is completely filled with said compensating medium.

14. (New) Optical unit according to claim 5, wherein said compensation space extends radially symmetric to the optical axis of the beam path.

15. (New) Optical unit according to claim 8, wherein said cooling holder completely encompasses the entire envelopes of the solid bodies in intimate thermal contact.

16. (New) Method for compensating thermal optical effects in an arrangement containing optical components generating a beam path, said compensating being accomplished by at least three optical transparent elements in cooperation having an intimate contact, adjacent elements of said at least three elements having different material properties of radiation absorption, radial thermal conducting, and thermal dispersion, said method comprising:

heating by said radiation absorption;

creating a distribution of temperature by said radial thermal conducting; and

generating a thermal lens by said thermal dispersion.

17. (New) Method according to claim 16, wherein two not adjacent elements of said at least three optical elements are transparent

optical solid bodies and at least one of said at least three elements between said optical solid bodies being a compensating medium, said optical solid bodies having a prescribed radiation absorption, said method further comprising:

said prescribed radiation absorption creating a radial heating pattern by an incident radiation;

compensating thermal optical effects in said optical components and said adjacent elements based on imprinting said radial heating pattern by said intimate contact to said compensating medium.

18. (New) Method according to claim 17, wherein said solid bodies have a prescribed absorption of a laser radiation in the beam path, said method further comprising:

cooling said compensation medium and said adjacent solid bodies to the same temperature at their periphery.

19. (New) Method according to claim 18, wherein said cooling said compensation medium and said adjacent solid bodies to the same temperature at their periphery is in an encompassing fashion at the same radial distance from the axis of the beam path.

20. (New) Method according to claim 17, wherein said arrangement containing optical components is a laser resonator, said laser resonator having a pumping optical radiation, and wherein said prescribed absorption of said optical solid bodies is an absorption of said pumping optical radiation.